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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,975	02/22/2006	Shaobing Wu	160-P-1654USWO	2269
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IPLM GROUP, P.A. POST OFFICE BOX 18455 MINNEAPOLIS, MN 55418			EXAMINER BAUMSTEIN, KYLE	
			ART UNIT	PAPER NUMBER
			1796	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/530,975

Applicant(s)

WU ET AL.

Examiner

KYLE BAUMSTEIN

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/22)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 3/8/2010

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6-13, 17-19, and 24-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Schipper et al. (WO/2000/024837).

US Pat. 6579932 is used as the document of reference in the following.

Schipper teaches an aqueous coating composition comprising a mixture of polyurethane dispersions. The invented composition comprises a polyurethane/acrylate hybrid dispersion comprised of a polyurethane resin and a vinyl resin wherein the ratio of polyurethane to vinyl resins is in a range of 9:1 to 1:9 (col. 2, line 35). The hybrid dispersion comprises hydrazine functional groups and carbonyl functional groups to provide a self-crosslinking reaction. The hydrazine and carbonyl functional groups may be present as chain pendant groups in the polyurethane or the polyacrylate (col. 2, line 38-54). The polyurethane is prepared by the reaction of an organic isocyanate and a polyol. The polyols are selected from a list including polyesters, polyethers, and polycarbonates; and the isocyanates can be aliphatic or aromatic (col. 3, line 37-col. 4, line 1). Carbonyl functionality may be introduced into the polyurethane during the prepolymer formation or the chain extending step and the references states that

polycarbonyl compounds can be used to do so, including acetonyl acetone which would yield a compound having an diacetone functional group (col. 7, 18-25).

The vinyl polymer used to prepare the invented dispersion is obtained by free radical addition polymerization of at least one olefinically unsaturated monomer, including acrylates and methacrylates. In addition, the vinyl polymer may contain, as copolymerized units, 0.5 to 10 % by weight of monoolefinically unsaturated monocarboxylic acids and/or dicarboxylic acids (col. 7, line 50-67). The inclusion of this amount of acidic functional groups would produce a polymer having an acid number that falls within the acid number claimed in the instant application. Hydrazine is mentioned as a compound used to prepare a hydrazide-containing polyvinyl polymer (col. 8, line 40). Although the reference does not disclose the glass transition temperature of the polyvinyl polymer, the incredibly large range claimed in the instant application would lead one of ordinary skill in the art to assume that the invented polymer falls well within said range.

A variety of additives can be included in the invented composition, including pigments and wetting agents (col. 11, line 1-6). The aqueous dispersion of the prior art is cured at a temperature ranging from 0 to 40°C (col. 12, line 18). Also, although the reference does not explicitly state that the invented composition is a one-pack composition, said composition is the same as that which is claimed in the instant application, therefore, it is assumed that it is stored and used as such.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schipper et al. (WO/2000/024837).

Schipper teaches the aforementioned composition that comprises a polyurethane/polyacrylate hybrid dispersion wherein hydrazide and carbonyl functional groups are included on either the polyurethane or the polyacrylate. Although many compositions are disclosed in the reference, it has been held that the mere fact that the reference suggests a multitude of possible combinations does not in and of itself make any one of these combination less obvious (*Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir. 1989)). Therefore, it would have been obvious to one having ordinary skill in the art to have prepared a composition as claimed in claim 5 of the instant application from the disclosure of the invented composition.

Claims 14-16, 20-23, and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schipper et al. (WO/2000/024837) as applied to claims 1-13, 17-19, and 24-27 above, and further in view of Irlé et al. (US Pat. 6063861).

Schipper teaches the aforementioned composition comprising a polyurethane/polyacrylate hybrid dispersion wherein the polyurethane may comprise diacetone functional groups and the polyacrylate may comprise dihydrazide functional

groups. The prior art discloses that the composition can be used as a coating on a variety of substrates including metal, wood, and paper (col. 12, line 13-15). The invented composition has been shown to be substantially analogous to that as is claimed in the instant application. However, Schipper does not disclose the use of a crosslinking agent in the composition.

Irlle teaches self crosslinkable polyurethane-polyacrylate hybrid dispersions comprising a polyurethane dispersion and a polyacrylate polymer as well as a difunctional amine (see abstract). The reference discloses that it has been described that polyurethane-polyacrylate hybrid dispersion which have carbonyl functional groups and polyfunctional amines form a stable, self-crosslinking, one component composition (col. 2, line 4-11). It has been held that the selection of a known material based on its suitability for its intended use supports a *prima facie* case of obviousness (*Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945)). Therefore, it would have been obvious to have added a polyamine crosslinking component to the composition disclosed by Schipper to further crosslink the invented composition so as to yield a product having higher crosslink density which will produce a coating having improved strength and toughness. Regarding the amount of said polyamine used, although a preferred amount of amine is not generically disclosed in the reference, examples B3-B7 (col. 7, line 40-56) show the use of 0.73 to 12.8 wt. % of diethylenetriamine in the polyurethane-polyacrylate dispersions. Such amounts fall within the range claimed in the instant application.

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schipper et al. (WO/2000/024837) and Irle (US Pat. 6063861) as applied to claims 14-16, 20-23, and 29-31 above, and further in view of Mosbach et al. (US Pat. 4764553).

The combination of Schipper and Irle teaches the aforementioned composition comprising a polyurethane/polyacrylate dispersion and a crosslinking component. The composition has been shown to be substantially analogous to that as is claimed in the instant application. Irle teaches the inclusion of diamine compounds, such as ethylene diamines, as crosslinking agent for polyurethanes and polyurethane/polyacrylate dispersions. However, there is no mention of the use of dihydrazide compounds as crosslinking agents.

Mosbach teaches water soluble polyurethanes and coatings comprising them. The invented composition comprises a polyurethane prepared by the reaction of polyisocyanate and a polyol as well as chain-lengthening or crosslinking agents, among other components. As such chain-lengthening or crosslinking components, the reference discloses the use of diamine compounds, such as ethylene diamine, as well as hydrazides (col. 5, line 25-35). Mosbach teaches that diamines and hydrazides are functional equivalents for the purpose of crosslinking polyurethane polymer compositions. It is *prima facie* obvious to substitute art-recognized functional equivalents known for the same purpose (See MPEP § 2144.06). While the composition invented by Mosbach is not a polyurethane/polyacrylate hybrid dispersion, these crosslinking agents will react in the same manner as those disclosed in Irle. The nitrogen atoms of the amine or hydrazide will react with the carbonyl carbons in both the

polyurethane and polyacrylate polymers effectively crosslinking the polyurethane composition or the binary hybrid dispersion of the two. Therefore, it would have been obvious to one having ordinary skill in the art to have used the hydrazide crosslinking agent disclosed in Mosbach as the crosslinker in the composition disclosed by the combination of Schipper and Irle.

Response to Arguments

Applicant's arguments with respect to claims 1-31 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KYLE BAUMSTEIN whose telephone number is (571)270-5467. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KBB/

/RANDY GULAKOWSKI/
Supervisory Patent Examiner, Art Unit 1796

